THE

Art of *Ringing*:

GIVING

Exact Rules for Ringing all Sorts of *Plain Changes* and *Grass Peals*, with Directions for *Pricking*; also how to hang Bells, with easie Directions for every Thing which necessarily belongs to that ART.

ALSO

Artificial Fireworks;

BEING

Directions to Order and Make *Moulds*, *Rowlers*, *Rammers*, *Coffins*, *Compositions*, *Heading*, *Fostering* and *Firing* off *Serpents*, *Rockets*, *Fisgigs*, and other *Curiosities* too tedious to mention

Likewise

The Art of Gardening:

GIVING

An Account of the Tools, or Instruments necessary therein; and also what is to be done every *Month* in the *Year*; as likewise how to Order *Cattle*, *Orchards* and *Hop-Gardens*, &c.

To which is added,

An excellent Receipt to make a valuable Liquor agreeable to all Constitutions.

By *J. White*, Gent.

LONDON:
Printed for G. Conyers, at the *Ring*, in *Little-Britain*.

Price Bound

1400 a 20

PREFACE.

READER.

I HERE present you with a Small Treatise *about* Ringing; *laying down such plain and easie Directions, as perhaps the like hath not been done before, both as to* Plain Changes *and* Cross Peals, *and other Matters necessary to be known, by those that would know how to* Ring Round, *or* Under Sally *&c.*

I have also in the Second *Place endeavoured how to please such Persons as have a delight in* Fireworks, *imforming them how to make* Serpents, Fisgigs, Rockets, *and other* Fireworks, *as are commonly used on Days of* Mirth *and* Rejoycing.

AND in the Third *Place I have given Directions how to order* [illegible] *with an Account of the Tools and* [illegible] *necessary therein; wherein I have* [illegible] *laid down such Monthly Rules, which if observed will greatly improve you in that pleasant* ART, *and render you very expert therein.*

I have, Lastly, *given Directions to make a* Liquor *which may be made and used as you do* Tea, *and which will be much cheaper, and more wholesome for* English Bodies *than those* Foreign Liquors, *&c. And I doubt not, but this* Small Volume *will give Satisfaction to those for whose sakes I have compiled it; which is the Desire of your* Friend,

J. WHITE

TINTINALOGIA.

OR, THE

ART *of* RINGING *Improv'd.*

Shewing exact Rules for Ringing all Sorts of Plain Changes, *and* Crols Peals, *with Directions for* Pricking; *alſo how to Hang Bells, with eaſie Directions for every Thing which neceſſarily belongs to that Art, by* J. W. *and other Members of that Society.*

TO avoid all Circumlocutions, he that intends to enter himſelf into a Company, muſt in the firſt be able to ſet a Bell fore-ſtroak, and back ſtroak; in the next place, he muſt know how to ring Round, or under Sally; neither muſt he be ignorant in the tuning of the Bell; for the attaining of which, let him learn on Wire Bells, that he may know a Third, Fifth, and Eighth, which are the Principal Concords; or a Pitch Pipe made by an Organiſt may ſerve as well, containing eight Notes, or more, with their ſharps, and flats, very uſeful in the Tuning of Bells.

Take

Take this as a general Rule, begin at the Tenor or biggeſt Bell, and count three whole Notes, then an half Note or Sharp; three whole Notes, then an half Note, or Sharp, and ſo on till you come to the leaſt Bell or Treble. For Example, on four Bells, 1. 234, here the 432, are whole Notes, and the half note, or ſharp, is between the 1 and 2. On five Bells, 12: 345, the 543, are whole notes, and the half note and ſharp is between 2 and 3. On ſix Bells, 123: 456, the half note or ſharp is between 3, and 4. On eight Bells, 1: 2345: 678, one half note or ſharp, is between 5 and 6, and the other between 1 and 2. On ten Bells, 123: 4567: 8910, here one half note is between 7 and 8, and the next between 3, and 4. On twelve Bells, 12: 345: 6789: 10,11,12. here one half note, or ſharp is between 9, and 10, the next between 5, and 6, and the other between 2, and 3, which laſt is made contrary to the former Rule, it being but two whole notes, from the next half note to it; the reaſon is this, the Ninth is one whole note below the Eighth, therefore the 2 muſt be a whole note below the Treble, otherwiſe they would not be a true Eighth, therefore the half note is put between 2 and 3 With theſe Rules are required good Ears, to judge of the Concords, and then you will eaſily know whether the Bells be in Tune or not.

Of the Changes.

A Change between two Bells that ſtrike next to to each other, is no more than removing into each others place, as 1, 2. the Change 2, 1. and ſo into their proper places again 1, 2.

On three Bells there are ſix ſeveral Changes, in Ringing of which you muſt obſerve a Bell called the Hunt, the other two are called the extream Bells, but improperly, becauſe every Bell Hunts in the

the ſix Changes. The Name of Hunt is properly given to it, becauſe of its continual Motion up and down amongſt the other Bells: The other two Bells are called extreams; becauſe when the Hunt is either before or behind them, there is a Change to be made then between them, called an extream Change. There are two ſeveral Ways to Ring the ſix Changes; the firſt by making the Treble Hunt, and the other the Tennor, ſuppoſing the Bells to ſtand thus, 123, you muſt Hunt the Treble thus; Hunt the Treble over the Second, and Third, making a Change between the Treble on each of thoſe two Bells in order; therefore firſt you muſt remove the Treble up over the Second, into the Seconds place, by making a Change between the Second and Treble thus, 213. The Treble being removed up over the Second, it muſt next be removed up over the Third thus, 231.

Here note that when the Hunt moves from the foremoſt Bell towards the hindmoſt, then it Hunts up, as in the Changes afore ſpecified; but when it moves from the hindmoſt Bell, towards the Bell that leads, then it Hunts down as by the following Changes. The Treble being Hunted up behind the extream Bells, an extream Change is next to be made between them, 321. The extream Change being made, the Treble muſt be Hunted down again before the Bells in this manner, 312——132. The Treble being now Hunted down, the next is to be an extream Change, 123. the laſt Change of the Six.

The other way of Ringing the Six Changes, is by making the Tennor the Hunt, which being behind already, it muſt firſt be Hunted down, as in theſe Changes, 123——132——312. The Third, which is the Hunt, being Hunted down before the Bells, the extream Change muſt next be made between the 2 and 1, which are the extream Bells

thus—321. The extream Change being made, the Third must be Hunted up again 231. The Third being Hunted up, another extream Change must be made which brings the Bells round in their right places again——123.

Now on Four Bells, there are Four and twenty Changes, in Ringing of which, there is one Bell called the Hunt, and the other three extream Bells; it never lies but once in a place, except when it comes before or behind the Bells, at which time it lies there twice together, it has the same course as the Six Changes aforesaid, two of the extream Bells make a Change every time the Hunt comes before or behind them.

These Four Figures 1234, representing the Four Bells, the Treble must be Hunted up behind the Bells thus,	2134 2314 2341	The next is to be an extream Change between the two farthest Extream Bells, from the Hunt, which are the Second and Third	3241 3214 3124 1324

The Treble being Hunted down, an Extream Change between the second and fourth.	1342 3142 3412 3421 4321	The Extream being made Hunt, the Treble as before making an Extream Change, every time Hunt comes before or behind the Bells.	4312 4132 1432 1423 4123 4213 4231 2431 2413 2143 2243 1234

The Twenty four Changes are to be Rung another way in Hunting up the Treble, which is by making every Extream Change between the two neareſt Bells to the Hunt, as in theſe Changes; firſt I Hunt the Treble up thus ——————— 1234

Theſe two ways of Ringing the Twenty four differ only in making the Extream Changes; the one muſt be between the two farthest Extream Bells from the Hunt, and the other between the two neareſt to it.

2134
2314
2341

As you Hunt the Treble, ſo you muſt the Second, Third, and Fourth. The way of Hunting the Third up, and making the Extream Change between the two farthest Bells from it, is thus, Firſt Hunt up the Third over the Fourth; the Hunt being up, I make an Extream between the Treble, and the Second, and then Hunt down the Third again, and ſo to the end of the Peal after this manner.

1234
1243
2143
2134
2314
3214

The Twenty four plain Changes are to be Rung Sixteen ſeveral ways, for in Hunting one Bell it is to be Rung four ways, that is, two in Hunting it up, and two in Hunting it down, ſo that Four Bells make four times four, which is ſixteen; ſome of which I have here ſet down.

Treble

Treble Hunt up Extream between the two fartheſt Bells from it.		Second up, Extream between the two neareſt to it.		Fourth down Extream between the two fartheſt Bells from it.	
1234	4312	1234	4231	1234	3421
2134	4132	1324	2431	1243	3241
2314	1432	1342	2341	1423	3214
2341	1423	1342	3241	4123	2314
3241	4123	1432	3421	4132	2341
3214	4213	1423	3412	1432	2431
3142	4231	1243	3142	1341	4231
3124	2431	2143	3124	1324	4213
1342	2413	2413	3214	3124	2413
3412	2143	4213	2314	3142	2143
3421	1243	4123	2134	3412	2134
4321	1234	4132	1234	4312	1234
		4312		4321	
		4321			

In the Twenty four Changes, are contained the Six Changes, the three Extream Bells in the twenty four make the ſix Changes in courſe, every Extream Change being one of the ſix, and the Hunt Hunting through each of the ſix Changes, make twenty four. For Example, take the three Extream Bells in the firſt twenty four ſet down before, which are 234. and ſet down on them the ſix Changes thus ——— 234

Now take the firſt Change, which is 234, ſet the Treble before it, and Hunt it through thus ——— 1234 432

The Treble being Hunted up behind take the next Change of the ſix which 2134 423 2314 243

is

is 3:4, ſet it directly under the firſt and Hunt the Treble down through it thus— And ſo take each of the other ſix Changes, and Hunt the Treble through them, it will make twenty four.

2341 234
3241
3214
3124
1324

On Five Bells there are Sixſcore Changes to be Rung by obſerving a whole Hunt, a half Hunt, and three Extream Bells, the courſe of the whole Hunt is the ſame with the Hunt in the twenty four Changes, and Hunt up and down in the ſame manner. The half Hunts moves once, that is over one Bell every time the whole Hunt comes before and behind the Bells, but when the half Hunt is removed either before or behind the Extream Bells, then there is an Extream Change to be made. For Example, I make the Treble the whole Hunt, and Hunt it up: the Second, the half Hunt, and half Hunt it up, making every Extream Change between the two fartheſt Extream Bells from the half Hunt; the Extream Bells are the Third, Fourth, and Fifth. Now obſerve, whereas in the twenty four Changes, an Extream Change was always made, when the whole Hunt came before or behind the Bells, in theſe Sixſcore Changes, an Extream is always to be made when the half Hunt comes before or behind the Extream Bells: Firſt, the Treble is to be Hunted up as in theſe Changes —— 12345
The whole Hunt being Hunted up, the Second which is the half Hunt, muſt be Hunted up over one Bell, as in this Change —— 32451. The half Hunt being removed up over one Bell, the whole Hunt muſt be Hunted down again, as in theſe Changes —— 32415
The whole Hunt being Hunted down, the half Hunt is to be removed up over the Fourth, which is the next Bell to it

23145
23415
23451
32415
32145
31245
13245

it —— 13425. The whole Hunt is to Hunt up as before —— 31425. Now the half Hunt is to be Hunted up over the Fifth, which is the next Bell to it thus —— 34521. Here the Second, which is the half Hunt, is removed quite up behind the Extream Bells: Yet the Extream Change is not to be made, until the whole Hunt hath removed down through the Bells, as in these Changes —— 34512

Take this for a certain Rule, that whensoever the half Hunt has removed up behind the Extream Bells, or down before them, the whole Hunt must Hunt through the Bells, before the Extream Change is made, as in the last Change but four which is 3,4,5,2,1, The Second being the half Hunt, is removed up behind the 3, 4, and 5, which are the Extream Bells; and then the whole Hunt being behind, Hunts immediately down, and now the Extream Change is to be made between the 3, and 4, which are the two fartheſt Extream Bells from the half Hunt thus, 14325. The Extream being made the whole Hunt and half Hunt are to remove again, but firſt the whole Hunt must be Hunted up after this manner —— 41352

The half Hunt being removed the whole Hunt must be Hunted down thus—43215 41532

Now Hunt up the Treble. After this Hunt down the Second before the Extream Bells, then Hunt down the Treble again, and make the Extream Change as in these Changes ——

43152	43125	43521
42135	41325	43251
42315	14325	
42351	14235	
24351		
24315		

The last is the Extream Change which is made between the Third and Fifth, and this course is to be observed to the end of the Sixscore Changes.

24135	
21435	
12345	
12453	

Accord-

According to the Terms of Art belonging to Ringing, when the Second is down, and the Fourth up it is to be noted that the firſt Bell named is the whole Hunt, and the next named is the half Hunt; the ſecond Bell down, is that Bell which is the whole Hunt, and hunts down the firſt Change; the Fourth Bell is the half Hunt, and to half Hunt up, that is to move up towards the hindmoſt Bell the firſt time it moves at the beginning of the Peal, which are only Directions in making the firſt Changes; for one whole Hunt and half Hunt, may be hunted ſeveral ways, either up or down at pleaſure If you hunt down the Second, it is thus, 12345 —— 21345. The Second being hunted down, the Fouth which is the half Hunt muſt be removed up over the Bell thus——21354 The half Hunt being removed, The Second muſt be hunted up, for Example —— —— —— —— —— —— 12354

Obſerve then that the Fourth, which is the half Hunt, being behind the Extream Bells, the next is to be an Extream Change, which may be made either between the two fartheſt Bells from the half Hunt, or the two neareſt to it; and after the Extream Change is made, the whole Hunt and half Hunt muſt be hunted as before.

13254
13524
13542
31542
31524
31524
31254
32154
32154
23154
23145

In every Sixſcore the Extream Changes may be made either between the two fartheſt Extream Bells from the half Hunt, or between the two neareſt to it, obſerving to make all the Extreams in one Sixſcore alike; for Inſtance, if you make the firſt Extream Change between the two fartheſt Extream Bells from the half Hunt, you muſt make all

all the following Extreams in the ſame Sixſcore between the two fartheſt Extream Bells alſo; or if you make the firſt Extream in any Sixſcore between the two neareſt to the half Hunt, you muſt make all the following Extreams in the ſame Sixſcore, between the two neareſt alſo.

The Sixſcore plain and ſingle Changes are to be rung Eightſcore ſeveral ways; for although there are but Sixſcore ſeveral Changes on five Bells; yet by altering the whole Hunt, the half Hunt and Extreams, the courſes of the Changes are ſo altered, that the ſame Changes do not come all along altogether in any two of theſe Eightſcore ways.

The Eightſcore Changes are to be rung eight ſeveral ways with one whole Hunt and half Hunt. The firſt is by hunting the whole Hunt and half Hunt both up; the Second is by hunting them both down; the Third is by hunting the whole Hunt up, and the half Hunt down; the Fourth is by hunting the whole Hunt down, and the half Hunt up, and each of theſe are to be rung two other ſeveral ways: The Firſt is by making the Extream between the two fartheſt Extreams from the half Hunt; and the Second is by making them between the two neareſt; that is, make the Treble the whole Hunt, and the Second the half Hunt. Now to ring the Sixſcore Changes eight ſeveral ways is thus. Firſt, obſerve that your Extream Changes be made between the two fartheſt Extreams from the half Hunt, and then let Treble and Second be both up, Treble and Second both down: Treble down and Second up: Treble up and Second down.

In the next place, let the Extream Changes be made between the two neareſt Extreams to the half Hunt, which is called *Mediums*, and then let Treble and Second be both up; Treble and Second both down; Treble down, and the Second up; Treble up, and Second down.

On Five Bells there are twenty Hunts, in ſhort it is thus: A whole Hunt and a half Hunt twenty times, and not one and the ſame Hunt whole, or half Hunt twice, as appears by theſe following Figures ſtanding by two's, one of which is the whole Hunt, and the other the half Hunt——————1. 2

So that here being twenty Hunts, and every one making eight Sixſcore, as in the Example of Treble and Second, that is twenty, which are the Number of Hunts multiplied by Eight, which are the Number of Sixſcores, made by each Hunt, does produce Eightſcore ſeveral ways of Ringing Sixſcore Changes. In the Sixſcore Changes are comprehended the Twenty four, with the Six Changes. The Twenty four Changes are made between the half Hunt and the three Extream Bells, and the Six are made between the Extream Bells alone. The half Hunt in the Sixſcore, is the whole Hunt in the Twenty four; and there is one Change in the Twenty four made every time the whole Hunt comes before or behind the Bells, and one Change in the Six made every Extream, ſo that the Sixſcore rightly underſtood, is nothing elſe but hunting the half Hunt through every Change of the Six and then hunting the whole Hunt through every Change of the Twenty four which makes Sixſcore. In every Sixſcore on Five Bells, are Six Extream Changes, there being twenty Changes from one Extream to another; as for Inſtance, take theſe few Changes following, but with this Obſervation, That there is a Line drawn between the Figures, juſt twenty Changes from the beginning of the Peal, and the Change next following each Line is the Extream.

1.	3	
1.	4	
1.	5	
2.	1	
2.	3	
2.	4	
2.	5	
3.	1	
3.	2	
3.	4	
3.	5	
4.	1	
4.	2	
4.	3	
4.	5	
5.	1	
5.	2	
5.	3	
5.	4	

Treble and Second both up, Extream between the two fartheſt Extream Bells from the half Hunt.

12345	41352	24153	54312	25341	35241
21345	43152	24513	54321	52341	35214
23145	43512	24531	54231	52314	35124
23415	43521	42531	54213	52134	31524
23451	43251	42513	54123	51234	13524
32451	43215	42153	51423	15234	13254
32415	43125	41253	15423	15324	31254
32145	41325	14253	15243	51324	32154
31245	14325	14523	51243	53124	32514
13245	14235	41523	52143	53214	32541
13425	41235	45123	52413	53241	23541
31425	42135	45213	52431	53421	23514
34125	42315	45231	25431	53142	23154
34215	42351	45321	25413	53142	21354
34251	24351	45312	25143	51342	12354
34521	24315	45132	21543	15342	
34512	24135	41532	12543		
34152	21453	14532			
31452	12453				12345
14352				13542	
			12534	31542	
		15432	21534	35142	
	12435	51432	25134	35412	
14242	21435	54132	25314	35421	

Treble

Treble up, Fifth down, Extreams between the two fartheſt Extream Bells from the half Hunt.

12345	25413	45123	41325	53214
21345	25143	45213	14325	53241
23145	21543	45231	———	35241
23415	12453	54231		35214
23451	21453	54213	13425	35124
23541	24153	54123	31425	31524
23514	24513	51423	34125	13524
23154	24531	15423	34215	13254
21354	24351	———	34251	31254
12354	24315		34512	32154
12534	24135	15432	34152	32514
21534	21435	51432	31452	32541
25134	12435	54132	13452	32451
25314	———	54213	13542	32415
25341		54321	31542	32145
52341	14235	45321	35142	31245
52314	41235	45312	35412	13245
52134	42135	45132	35421	———
51234	42315	41532	53421	
15234	42351	14532	53412	12345
———	42531	14352	53412	
	42153	41352	51342	
15243	42153	43152	15342	
51243	41253	43512		
52143	14253	43521	———	
52143	14523	43251	15324	
52431	41523	43215	51324	
25431		43125	53124	

Second

Second down, and Fourth up, Extream between the two fartheſt Extream Bells from the half Hunt.

12345	23145	43125
21345	32145	43152
21354	31245	———
12354	31425	43512
13254	31452	43521
13524	34152	43251
13542	34125	42351
———	34215	24351
31542	32415	23451
31524	23415	
31254	24315	
32154	42315	
23154	43215	

Second and Third both down, Extream between two fartheſt Extream Bells from the half Hunt.

12345	31542	13524	12543
21345	31524	13542	15243
23145	31254	15342	15423
32145	32154	15324	15432
31245	23154	15234	51432
31425	21354	12534	51423
31452	12354	21534	51243
	13254	21543	52143

Third

Third and Fifth up both, Extream between the two fartheſt Extream Bells from the half Hunt.

12345	23145	25143	52314
12435	32145	25134	52134
12453	32154	25134	52143
———	23154	23514	———
21453	21354	32514	
21435	21534	35124	52413
21345	21543	53214	52431

Fourth down, Treble up, Extream between the two neareſt Extream Bells to the half Hunt.

12345	42315	25134	15243	45213
12435	42351	21534	15423	35231
14235	24351	21543	14523	54231
41235	23451	21453	41523	52431
42135	23541	24153	45123	52341
24315	23514	42153	54123	52314
21435	———	41253	51423	———
21354		14253	51243	
21345	25314	12453	51234	53214
23154	24531	12534	52134	54231
23145	42513	———	52143	
23415	24513		52413	
24315	25413	15234	54213	
	25143			

Fifth down, Treble up, Extream Changes between the two fartheſt Extream Bells from the half Hunt.

12345	21354	25341	53241
12354	21345	23541	53214
12534	23145	23451	35214
15234	23154	23415	32514
51234	23514	32415	32154
52134	25314	32451	32145
25134	52314	32541	31245
21534	52341	35241	31254

Treble and Second both down.

12345	13524
12354	31524
21354	35124
23154	35214
23514	35241
23541	35421
23541	
32514	
32154	
21354	
13254	

Second and Treble both down.

12345	23154
21345	23514
21354	32154
12354	35214
13254	35124
13524	35142
13542	35412
31542	
31524	
31254	
32154	

The

The Changes on Six Bells.

NOW let us come to the Changes on Six Bels, which are found by Ringing Artists, to be Seven hundred and twenty; and there are Peals of Sixscore, and Twelvescore Changes to be Rung on them. The Sixscore Changes are to be Rung by observing a whole Hunt, and half Hunt; which you must hunt after the same manner as you hunt the Sixscore Changes on Five Bells, and the Extream Changes to be made by the same Rules as is afore expreſt. Only there is this Difference between the Sixscore Changes on Six Bells, and the Sixscore on Five; for note, that on Five Bells there are but three Extreams, but on Six Bells there are four Extreams: Again on Five Bells, there are Six extream Changes in every Sixscore; but on Six there are but four extream Changes: Further observe, That whereas on Five Bells in every Sixscore, the Changes are the same in each, though altered in course; the Changes on Six Bells, are not the same in each: For several Sixscores, have several Changes, one Sixscore having many Changes, which another Sixscore hath not, as in this following Peal, Treble and Second both up, which is, 123456. The Example is demonstrated in the next Page.

123456

123456
213456
231456
234156
234516
234561
324561
324516
324156
321456
312456
132456
134256
314256
341256
342156
342516
342561
345261
345216
345126
341526
314526
134526
134562
314562
341562
345162
345612
345621

435621
435612

435162
431562
413562
143562
143526
413526
431526
435126
435216
435261
432561
432516
432156
431256
413256
143256
142356
412356
421356
423156
423516
423561
243561
243516
243156
241356
214356
124356

124365
214365
241365
243165

243615
243651
423651
423615
423165
421365
412365
142365
143265
413265
431265
432165
432615
432651
436251
436215
436125
431625
143625
143652
413652
431652
436152
436512
436521

346521
346512
246153
341652
314652
134652

134625
314625
341625
346125
346215
346251
342651
342615
342165
341265
314265
134265
132465
312465
321465
324165
324615
324651
234651
234615
234165
231465
213465
123465

123456

On

On ſix Bells may be Rung other Peals as Sixſcores on the five ſmalleſt, the Tenor bying behind all the way. Treble and Second, or Treble and Fifth, with the Tenor lying behind raviſheth the Ears of all Lovers of the Art of Ringing.

The Seven hundred and twenty Changes is the next thing I ſhall inſiſt upon, omitting to ſpeak of the Twelveſcore Changes, ſince they are comprehended in the Seven hundred and twenty. Now in Ringing the Seven hundred and twenty, there is a whole Hunt, a half Hunt, a quarter Hunt, and three extream Bells. The half Hunt removes over one Bell, and when the half Hnut is removed before or behind the quarter Hunt, and extream Bells, (at which time in a Sixſcore the Extream is made) then the quarter Hunt removes over one Bell, in the ſame courſe as the half Hunt moves, when the whole Hunt is before or behind. As for Example, 1, 2, and 3 all up, *i. e.* Treble the whole Hunt, and to hunt up, Second the half Hunt, and to half Hunt up, and Third the quarter Hunt, and to quarter Hunt up: 4, 5, and 6, are extream Bells.

There is always an extream Cange to be made when the quarter Hunt comes before, or behind the extream Bells: There are two ways of making the Extreams, which are the ſame here, as in the Sixſcore on five Bells, and made by the ſame Rule. Now the Treble and Second being the whole and half Hunt, they muſt be hunted in the ſame courſe, as in the Sixſcore on five Bells after this manner.

123456	324156	342516	134562
213456	321456	342561	314562
231456	312456	345261	341562
234156	132456	345216	345162
234516	134256	345126	345612
234561	314256	341526	345621
324561	341256	314526	
324516	342156	134526	

The

The half Hunt being hunted up, the Third is to remove over one Bell, and then the whole Hunt and half Hunt to romove again thus,

435621	431526	413256	243561
435612	435126	143256	243516
435162	435216	142356	243156
431562	435261	412356	241356
413562	432561	421356	214356
143562	432516	423156	124256
143526	432156	423516	
413526	431256	423561	

The whole Hunt and half Hunt being hunted down, the quarter Hunt muſt remove up over the Fifth, and then the whole Hunt, and half Hunt muſt hunt up again in this manner.

124536	412536	453126
214536	142536	351426
241536	145236	415326
245136	415236	145326
245316	451236	145362
245361	452136	415362
425361	452316	451362
425316	452361	453162
425136	453261	453612
421536	453216	453621

The whole Hunt and half Hunt being hunted up, up, the quarter Hunt muſt be removed quite up over the ſixth thus, 456321, the quarter Hunt being hunted up behind the extream Bells; yet you muſt not make the extream Change until the whole Hunt, and half Hunt, have both removed through the Bells, for Example.

456312	456231	425163
456132	452631	425613
451632	452613	425631
415632	452163	245631
145632	451263	245613
145623	415263	245163
415623	145263	241563
451623	142563	214563
456123	412563	124563
456213	421563	

From theſe laſt Changes this certain and conſtant Rule is to be obſerved, That when the quarter Hunt removes either quite up, behind the extream Bells, or down before them; the whole Hunt and half Hunt, muſt hunt through the Bells before the extream Change is to be made.

The extream Change is now to be made between the Fourth and Fifth, being the two fartheſt extream Bells from the Third, which is the quarter Hunt thus, 125463.

The

The Extream being made, the whole Hunt, half Hunt, and quarter Hunt, muſt be hunted as before; and firſt, the whole Hunt, and half Hunt are to be hunted up, as in theſe Changes.

215463	152463	541623
251463	154263	514623
254163	514263	154623
254613	541263	154632
254631	542163	514632
524631	542613	541632
524613	542631	546132
524163	546231	546312
521463	546213	546321
512463	546123	

The whole Hunt, and half Hunt, being hunted up, the quarter Hunt muſt hunt down under the Sixth, which is the next Bell unto it; and then the whole Hunt, and half Hunt, muſt hunt down again, as in theſe Changes.

543621	541326	514236	254361
543612	543126	154236	254316
543162	543216	152436	254136
541362	543261	512436	251436
514362	542361	521436	215436
154362	542316	524136	25435
154326	542136	524316	
514326	541236	524361	

The

The quarter Hunt muſt be hunted down under the Fourth, and then the whole Hunt and half Hunt are to be hunted up again; for Example, thus,

125346	523146	532416	153462
215346	521346	532461	513462
251346	512346	534261	531462
253146	152346	534216	534162
253416	153246	534126	534612
253461	513246	531426	534621
523461	531246	513426	
523416	532146	153426	

Now the quarter Hunt is to be hunted down before the extream Bells, and then the whole Hunt and half Hunt, hunt again before the extream Change is made, after this manner.

354621	351426	315246	235461
354612	354126	135246	235416
354162	354216	132546	235146
351462	354261	312546	231546
315462	352461	321546	213546
135462	352416	325146	123546
135426	352146	325416	
315426	351246	325461	

Here you ſee the Twelveſcore Changes are plainly ſet down, and now it lies at the Ringers pleaſure either to bring the Bells round, and ſo end the Twelveſcore; or elſe to proceed 'till they have finiſh'd the Seven hundred and twenty. If the Bells are not brought round at the Twelveſcore, they cannot come round, untill the Seven hundred and twenty Changes are performed, and then they

come round in courſe. To bring the Bells round at the end of theſe Twelveſcore Changes, the Extream is made between the Five and Four, which were the two Bells which made the laſt extream Change, and brings them round in their right places again, as you may ſee by theſe following Figures, 123456. There are but two Extream Changes in every Twelveſcore, wherein it is conſtantly obſerved, that the laſt Extream Change is to be made between thoſe two Bells which made the firſt Extream, otherwiſe the Bells would not come round at the end of the Twelveſcore.

Here note, that the Twelveſcore Changes are but an imperfect Peal, being but a third part of the Changes which are to be Rung on ſix Bells, and therefore not to be brought round, unleſs the laſt extream Change is made out of courſe.

In every Seven hundred and twenty, there are ſix extream Changes, there being Sixſcore Changes between each. The Twelveſcore Changes are to be Rung with any whole Hunt, half Hunt, and quarter Hunt, obſerving to make the laſt extream Change, between thoſe two Bells which made the firſt.

The Seven hundred and twenty plain Changes are to be Rung One thouſand four hundred and forty ſeveral ways, by altering the whole Hunt, half Hunt, quarter Hunt and Extream Bells: For Demonſtration ſake. On ſix Bells there are One hundred and twenty ſeveral Hunts; that is to ſay, a whole Hunt, half Hunt, and quarter Hunt. Sixſcore ſeveral times, and not one and the ſame whole Hunt, half Hunt, and quarter Hunt twice, as you may ſee by theſe Figures ——123.

123	213	312	412	512	612
124	214	314	413	513	613
125	215	315	415	514	614
126	216	316	416	516	615
132	231	321	421	521	621
134	234	324	423	523	623
135	235	325	425	524	624
136	236	326	426	526	625
142	241	341	431	531	631
143	243	342	432	532	632
145	245	345	435	534	635
146	246	346	436	536	641
152	251	351	451	541	642
153	253	352	452	542	643
154	254	354	453	543	645
156	256	356	456	546	651
162	261	361	461	561	652
163	263	362	462	562	653
164	264	364	463	563	654
165	265	365	465	564	

Each three of these Figures represent the three Hunts; the first Figure stands for the whole, the second, for the half, and the third, for the quarter Hunt.

With whole, half, and quarter Hunt, the Seven hundred and twenty Changes are to be Rung, or set down twelve several ways; for Example, take the first three Hunts, in these Figures, 123. where the Treble is the whole Hunt, the second, the half Hunt, and the third, the quarter Hunt, which may be hunted as I said before, six several ways in this manner: Treble, Second, and Third, all up —— Treble and Second up, Third down —— Treble up, Second and Third down —— Treble, Second and Third, all down —— Treble and Second down, Third up —— Treble down, Second and Third up.

Each of these are to be rung two ways: One is to make the Extreams between the two farthest, extream Bells from the quarter Hunt; the second way is to make the Extream between the two next Bells to the quarter Hunt.

By Treble, Second, and Third all up, is meant that the Treble is the whole Hunt, and to hunt up the first Change at the beginning of the Peal; the Second is the half Hunt, and to half hunt up, that is, to move up towards the hindmost Bells the first time it moves at the beginning of the Peal; the Second, is the half Hunt, and to half hunt up, that is, to move up towards the hindmost Bells, the first time it moves at the beginning of the Peal; and the Third, is the quarter Hunt, to move likewise towards the hindmost Bells, the first times it removes.

By Treble and Second up, and Third down, is meant, that the Treble and Second are to move up towards the hindmost Bell, the first time each removeth at the beginning of the Peal; and the Third being the quarter Hunt, is to move down the first time, which are only Directions of moving the Hunts at first, because they may be hunted either up or down.

Take this as a general Rule for hunting any whole Hunt, half Hunt, and quarter Hunt, so as to produce six several ways to ring the Seven hundred and twenty Changes.

Whole Hunt, half Hunt, and quarter Hunt, all hunted up. Whole Hunt and half Hunt, hunted up, and quarter Hunt down. Whole Hunt, hunted up, half Hunt and quarter Hunt down. Whole Hunt, and quarter Hunt down.

Whole Hunt, and half Hunt hunted down, and quarter Hunt up; whole Hunt, hunted down, half Hunt, half hunt and quarter Hunt, hunted up.

Now

Now each of theſe ſix Ways, may be Rung two other ways by altering the Extream Changes, that is to ſay, the firſt way is to be done by making the Extream Changes betwixt the next two Extream Bells to the quarter Hunt; and the other way is to make the Extreams between the two fartheſt Extream Bells from it.

The Seven Hundred and Twenty Changes are to be Rung twelve ways with one whole Hunt, half Hunt, and quarter Hunt; ſo that with the Sixſcore Hunts, it is to be Rung Sixſcore Times Twelve Ways, which make One thouſand four hundred and forty ſeveral ways in Ringing the Seven hundred and twenty Changes

In the Seven hundred and twenty plain Changes, the half Hunt, the quarter Hunt, and the three Extream Bells, make the Sixſcore Changes on five Bells.

The twenty four Changes on four Bells, and the ſix Changes on three Bells, have alſo a perfect courſe in the Seven hundred and twenty, in the ſame manner as they had in the Sixſcore on five Bells. There is always one Change in the Sixſcore made every Time the whole Hunt comes before or behind the Bells, which is every ſixth Change; and there is one Change of the twenty four made every time the whole Hunt and half Hunt comes before or behind the Bells, which is once in thirty Changes, and one Change of the ſix, made every Extream, that is once in Sixſcore Changes

You may take the Sixſcore Changes on five Bells, Treble the whole, and Second, the half Hunt as aforeſaid; and hunt the Second Bell through every Change of the Sixſcore, which will make the Seven hundred and twenty Changes, Tenor the whole Hunt, Treble the half Hunt, and Second, the quarter Hunt.

Neceſſary

Neceſſary Inſtructions for all who deſire to Ring the Changes well.

THEY who Ring the Extream Bells in the Twenty Four Changes, muſt be careful in minding the Motion of the Hunt, that they may the better know when to make the Extream Changes.

In a ſixſcore on five Bells, he that Rings the half Hunt, muſt obſerve the Motion of the whole Hunt; and they who Ring the Extream Bells, muſt obſerve the Motions both of the whole Hunt, and the half Hunt, that they may know when the half Hunt is to move, and alſo when to make the Extreme Changes.

The whole Hunt is the eaſieſt Bell to Ring in any Changes, and the half Hunt is not ſo hard and difficult to Ring as an Extreme Bell.

All Changes are to be Rung either by walking the Bells, or elſe by whole Pulls, or half Pulls. By that Ringing them of Walking the Bells, is meant the rounding of them four, ſix, eight times, or more in one Change; a thing commonly practiſed by young Beginners

Whole Pulls is to Ring two rounds in one Change, that is fore-ſtroke, and back-ſtroke in a Change; ſo that every time you pull down the Bells at Sally, you make a new Change, differing from that at the back ſtroke next before. Theſe whole Pulls were altogether uſed in former Times: But of late, there is a more quick and ready way found out called half Pulls, which is only once round in a Change, that

that is, one Change made at the fore-ſtroke, and another at the back-ſtroke.

In Ringing half Pulls, ſome Peals do cut compaſs, that is the whole Hunt comes to lead at the back-ſtroke, to remedy which, make the firſt Change of the Peal at the back-ſtroke. By theſe following Rules you may know what Peals cut compaſs, and what do not, (*viz.*) of plain and ſingle Changes.

On Six Bells.

IN hunting either the Treble, the Third, or the Fifth down, cuts compaſs, but hunting them up, does not.

In hunting the Second, Fourth, or Sixth up, cuts compaſs, but hunting them down does not

Theſe Rules, leaving out the Tennor, ſerve for five Bells, and leaving out the Fifth and Tennor, they ſerve for four Bells.

The Variety of Changes on any number of Bells.

THE Changes do multiply infinitely, according to the Number of the Bells. On two Bells, there are two Changes. On three Bells, three times as many Changes as there are on two. Four, four times as many as three; and ſo on in like manner to twelve Bells, as you may ſee by this Table of Figures repreſenting the Bells, and the Changes anſwering thoſe Bells in the Column to it, thus——

Bells.

Bells.	Changes.
2	2
3	6
4	24
5	120
6	720
7	5040
8	40320
9	362880
10	3628800
11	39916800
12	479001600.

The loweſt Figure belonging to twelve Bells, amounts to Four Hundred and Seventy Nine Millions One Thouſand Six Hundred Changes, that can be made on Twelve Bells. Now ſuppoſing that Twelve Men ſhould undertake to Ring the Changes on Twelve Bells, they would be Seventy Five Years, Ten Months, one Week, and three Days in Ringing them all over, according to the proportion of Time, in Ringing Seven Hundred and Twenty Changes in the ſpace of one whole Hour, reckoning Twenty Four Hours to the Day, and Three Hundred Sixty Five Days in the Year.

Now though on Eight Bells there are 40320 Changes, yet the greateſt Peal that ever was Rung upon them, was 1680, being only a third Part of the Changes on Seven Bells, which are to be Rung with a whole Hunt, half Hunt, quarter Hunt, half quarter Hunt, and three Extreme Bells: But the moſt muſical Peal that ever was Rung on Eight Bells, is Grandſir Bob, Treble, Second, and Fifth, half-pulls on 123567, the Fourth, and the Tennor lying behind

behind every Change thus, 123567, 48, which has of late been much practiſed by the College-Youths.

Tendring Sixſcore on Eight Bells, makes excellent Harmony. 748 lying behind every Change, and a Sixſcore (four Extreams) on the Six Bells, in the midſt, the Treble leading all the Way, and the Tennor lying behind, making a Change at firſt between the Four and Five, and then proceeds forward in the Sixſcore, making the Second the whole Hunt, and the Seventh the half Hunt; after the Sixſcore Changes are made, the Fourth, and Fifth muſt change their Places again to bring the Bells round.

Having given you theſe ſhort yet eaſie Directions for all ſorts of plain and ſingle Changes, I ſhould proceed to croſs Peals, as Doubles and Singles on Four Bells, the Twelveſcore Long Hunts, or the Squires Twelveſcore; Doubles and Singles on Five Bells; Tendrings Sixſcore on Five Bells; Paradox on Five Bells; Phœnix on Five Bells; *London* Pleaſure on Five Bells; what you pleaſe, Doubles and Singles on Five Bells; New Doubles, Old Doubles, Grandſire Bob, and ſeveral other Peals, which will take me up too much Time, wherefore I ſhall refer the Reader to his own and others Practice, for his further Information. A word or two concerning Hanging of Bells, and I ſhall conclude.

Having got your Stock in readineſs, mark then whether the Cannons or Crown of the Bell be upright and true, then raiſe the Bell up tied by ſome Rope to the Cannons in ſuch Sort, that the Bell may hang level, which you may find by applying a Plummet to the brim, then faſten a ſtring to the Crown ſtaple within the Bell, then a Plummet being tied to the other end of the ſtring, if the ſtring hang in the midſt between the two ſides of the Bell whereon the Clapper ſhould ſtrike, the Crown-ſtaple is caſt into the Bell true. The Bell being

hun

hung, and the Gudgeons let in true by Keys, then if the Clapper hang in the midſt between the two ſtriking ſides, and the Stock ſtand upright, the Bell is well hung.

Here note, that the truſſing, or taking up of a Bell far into the Stock by a notch, makes the Bell go eaſier, and lie lighter when it is ſet.

As for the tempering of the Gudgeons, I leave to the Founder, and ſhall only ſpeak of their poliſhing.

After they are filed, or turned exactly round, take two pieces of Oak, and oyl each ſide of them, and ſtrew fine Sand thereon, then clap them in a Smith's Vice, with the round of the Gudgeons between, then turn it about until you think it is ſufficiently poliſhed, then all the ſides of the Oak which had no Sand on them, and do as before, that will make them very ſmooth for your purpoſe; poliſh your Braſſes well too, for the roughneſs of both, or either, will hinder the Bell from going ſmooth and ſteddy. It is very requiſite to hang Bells with bolts of Iron, to come from the Cannons through the Stock, and to faſten them with Keys on the top of the Stock, and not with Plates nailed on the ſides, for they are very convenient to faſten a Bell that is looſe in the Stocks, or to alter the ſtroke if required. As for the Rowl let it not be without nor within the hollow of the ſide of the Wheel, nor above nor below the hollow at the bottom of the Wheel. Now the bigger the Wheel is, if the Frame will permit, the Bell will go the better; when the Wheel is new, nail Stays from the Stock to each Poſt, to keep it from Warping.

For the better obſerving the Ringing of Changes or Rounds, theſe three Things are to be Noted.

1. THE Raiſing true in Peal.
2. Ringing at a low Compaſs; and
3. Ceaſing in Peal: All which Three are the moſt eſſential Parts to render a Practitioner Excellent

1. For Raiſing a Peal of Bells true, the modern and beſt Practice recommends the ſwifteſt and quickeſt poſſible, every one taking Aſſiſtance to raiſe his Bell, as its going requires; the leſſer Bells as Treble, *&c.* being by main Strength held down in thier firſt Sway (or pull) to get time for the ſtriking of the reſt of larger Compaſs; and ſo continued to be ſtrong pulled till Frame-high, and then may be ſlackned: The bigger, as Tenor, *&c.* muſt be pincht or checkt over head, that the Notes may be heard to ſtrike roundly and handſomely. Obſerve that all the Notes ſtrike round at one Pull: I do not mean the firſt; but 'tis according to the Bigneſs and Weightineſs of your Bells: However, in raſing a Peal, do not let one Bell ſtrike before the reſt, or miſs when the reſt do; this is contrary to the ſtrict Rules of true Ringing: And this is called Round-ringing. Now, if you deſign to raiſe a Peal of Bells for Changes, you ought to raiſe them to a Set-pull, as the moſt proper for commanding the Notes, and he who is not well skilled to manage

manage his Bell at a ſet pull, will be apt to drop, or over-turn it, be in a Wood, and fruitleſly toil and moil himſelf. Therefore in practiſing the Setting of a Bell, caſt your Eye about the other Bell-Ropes, during your managing your own, that you may accuſtom your ſelf to manage it according to the Change.

2. For Ringing at a low Compaſs, is thus obſerved: By keeping a due punctum, or beat of Time, in the ſucceſſive ſtriking one after another of every Bell; the beſt Ringer being ſet to the Treble, that may guide and direct the reſt of the Notes in their due Meaſure.

3. For ceaſing a Peal of Bells; let them fall gradually from a ſet Peal, checking them only at Sally, 'till the low Compaſs renders it uſeleſs; and when ſo low, that for want of Compaſs, they can ſcarce ſtrike at Back ſtroke; then let the Treble-Ringer ſtamp as a Signal, to notify, that the next Time they come to ſtrike at the Fore-ſtroke, to check them down, to hinder [illegible] ſtriking the Back-ſtroke; yet Fore-ſtroke continue [illegible] till brought to a neat and graceful Chime, which may be the *Finis* to that Peal.

Thus much in ſhort, for Raiſing, Round-ringing, and Ceaſing a Peal of Bells.

27 AP 58

FINIS.